SYNONYMICAL NOTES ON NEW WORLD WASPS OF THE SUBFAMILY SPHECINAE (HYMENOPTERA, SPHECIDAE)

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BY

A. S. MENKE
University of California, Davis, U.S.A.*)

Abstract

The following new synonymy is proposed: *Sphex flavipes* Smith, 1856 and *hirsutus* Saussure, 1867 = *Sphex flavovestitus* Smith, 1856; *Sphex croesus* Lepeletier, 1845 and *ichneumoneus ignota* Strand, 1916 = *Sphex ichneumoneus* (Linnaeus), 1758; *Sphex beata* Cameron, 1888 and *neotropicus* Kohl, 1890 = *Sphex nitidiventris* Spinola, 1853; *Sphex caliginosa* Erichson, 1848 and *erythroptera* Cameron, 1888 = *Sphex fusca* Lepeletier, 1845 (preoccupied, = *caliginosus*); *Sphex clypeata* Smith, 1856 = *Sphex latro* Erichson, 1848; *Sphex pensylvanicus robustisoma* Strand, 1916 = *Sphex pensylvanicus* Linnaeus, 1763; *Sphex servillei* Lepeletier, 1845 and *chichimecus* Saussure, 1867 = *Sphex fuliginosus* Dahlbom, 1843; *Sphex proxima* Smith, 1856 and *funestus* Kohl, 1890 = *Sphex difficilis* Spinola, 1853; *Sphex aztecus digueti* Berland, 1926 = *Isodontia philadelphica* (Lepeletier), 1845; *Sphex robusta* Cameron, 1889 = *Isodontia azteca* (Saussure), 1867; *Ammophila mutica* Dahlbom, 1845, *moneta* Smith, 1856, and *fragilis* Smith, 1856 = *Ammophila gracilis* Lepeletier, 1845.

Sphex guatemalensis Cameron, *tinctipennis* Cameron, and *Isodontia costipennis* (Spinola) are recognized as valid species.

Lectotypes are designated for many species and in addition to the species listed above, taxonomic and/or nomenclatorial notes are given for the following: *Sphex opacus* Dahlbom, *prosper* Kohl, *melanopus* Dahlbom, *latreillei* Lepeletier, *Palmodes dimidiatus* (De Geer), *Chlorion viridicoeruleum* Lepeletier and Serville, *hemiprasinum* (Sichel), *hemipyrrhum* (Sichel), *Ammophila binodis* (Fabricius), *auromaculata* Perez, *eximia* Lepeletier, and *Podalonia violaceipennis* (Lepeletier).

Introduction

Recent studies of types of sphecine species have revealed some new synonymy and also made possible the selection and designation of lectotypes for some. Probably the most important aspect of my investigations has been the identification of some of the Western Hemisphere wasps described by Lepeletier and Spinola, a few of which have gone unrecognized since they were described. Most Spinola wasp types, as well as many of Lepeletier's, are in the Spinola Collection in Turin, Italy. Much of the material in this collection is unlabelled, that is, there are no labels on the pins. Instead, the specimens of each species are pinned in front of large, rectangular, colored labels which bear the name and author of the species, and often the word "type", presumably indicating that these are the types of the species involved. Some labels have additional information such as the name of the

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collection from which SPINOLA obtained the insects ("coll. LATREILLE", "coll. SERVILLE", etc.). Although the majority of LEPELETIER's species are represented by material in the collection, only about half can definitely be said to be true types. Some specimens do not agree with the original description, or in other cases the data on the labels do not agree with those cited by the author of the species. This latter discrepancy makes it difficult to decide whether or not specimens should be considered as types even though they fit the original description perfectly. However, in most cases I have accepted these specimens as types with the belief that labelling errors are involved. I have taken this perhaps unsound course of action primarily because, at least in the case of LEPELETIER types, the specimens in Turin are probably as close to being true types as will be found.

Acknowledgements

During the summer of 1964 I visited several important European collections. To the following curators I extend my appreciation for their assistance during my visits: SIMONE KELNER-PILLAULT, Muséum National d'Histoire Naturelle, Paris; GUIDO BACCI, Instituto e Museo di Zoologia, Università di Torino, Turin; DELFA GUIGLIA, Museo Civico di Storia Naturale, Genoa; and J. F. PERKINS and I. H. H. YARROW, British Museum (Natural History), London.

Type material has also been borrowed from a number of institutions. I would like to thank the following people for the loan of types: MAX FISCHER, Naturhistorisches Museum, Vienna (KOHL types); EBERHARD KÖNIGSMANN, Zoologisches Museum der Humboldt Universität, Berlin (DAHLBOM and ERICHSON types); JOACHIM OEHLKE, Deutsches Entomologisches Institut, Eberswalde (STRAND types); CLAUDE BESUCHET, Muséum d'Histoire Naturelle, Geneva (DE SAUSSURE types); IVOR LANSBURY, University Museum, Oxford (SMITH type); and HUGO ANDERSSON, Lunds Universitets Zoologiska Institution, Lund (DAHLBOM types).

Systematics

Sphex opacus Dahlbom (fig. 8)

Sphex opaca Dahlbom, 1845. Hymen. Europaea 1 (fasc. 3): 437. Holotype ♂, "Americ. Merid." (Lund Universitets Zoologiska Institution, Lund).

Sphex flavipes iheringii Kohl, 1890. Ann. Naturhist. Hofmus. Wien 5 : 207. Lectotype ♂, Rio Grande do Sul, Brazil (Naturhistorisches Museum, Vienna), present designation.

I have examined the types of *opacus* and *iheringii* and can verify that SCHULZ (1912) and FERNALD (1931) correctly synonymized the two species. *Sphex opacus* closely resembles the typical color form of *S. flavovestitus* Smith but the latter does not occur within the range of *opacus* (southern Mexico to Argentina). Mexican *flavovestitus* are differently colored and are easily separated from *opacus* (see discussion under *flavovestitus*). In male *opacus* the broad fossulae on flagellomeres IV—VI which extend the full length of each flagellomere, the elongate thumblike median projection of the last sternite (fig. 8), and appressed golden hair on the gena, are distinctive features. The male genitalia of the two species are totally different. Female *opacus* differ from *flavovestitus* in having silver instead of gold

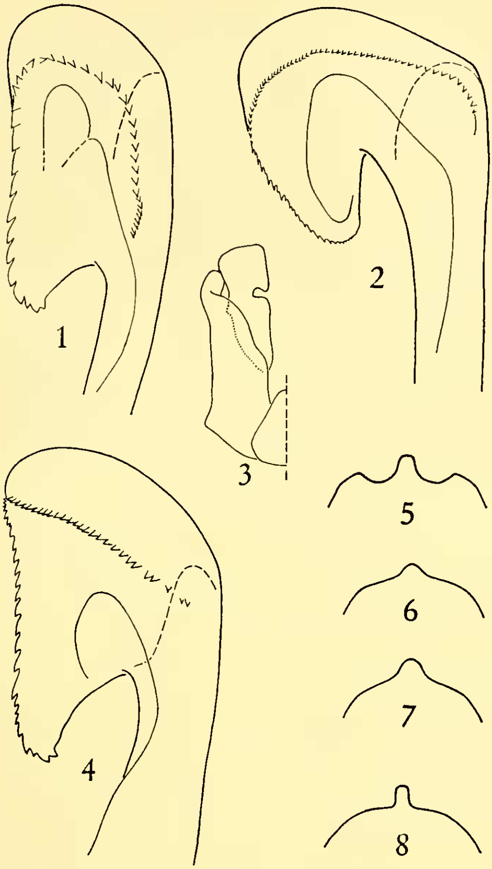

Fig. 1—2. Lateral view of head of dissected aedeagus of *Sphex nitidiventris* and *Sphex prosper* (lectotype), respectively. Fig. 3. Volsella of *Sphex prosper* (lectotype). Fig. 4. Lateral view of head of dissected aedeagus of *Sphex tinctipennis.* Fig. 5—8. Apical outline of male subgenital plate of *Sphex prosper* (lectotype), *tinctipennis, nitidiventris,* and *opacus,* respectively

appressed hair on the propodeum above the petiole socket. Also, female *opacus* usually have appressed gold hair on the gena.

Sphex guatemalensis Cameron

Sphex guatemalensis Cameron, 1888. Biologia Centrali-Americana, Hymen. 2 : 32. Lectotype ♀, San Geronimo, Guatemala (British Museum, London), present designation.

Cameron described *guatemalensis* from a male and female; however, I could find only the female and a slide of the male genitalia in London. The male genitalia of this species do not appear to differ from *S. opacus* Dahlbom suggesting that *guatemalensis* is merely a color form of Dahlbom's species. Schulz (1912) and Fernald (1906) considered *guatemalensis* as a subspecies of *opacus.*

Apparently however, the ranges of the two overlap in southern Mexico without intergradation of hair and body color which leads me to suspect that they are distinct species. The lectotype female of *guatemalensis* and a male in my collection from Hujintlan, Morelos, Mexico, have clear wings, and dense, bright golden, erect body hair in contrast to the infumate wings, and paler body hair of Mexican *opacus*. Furthermore, unlike *opacus, guatemalensis* has gold appressed hair on the propodeal enclosure and around the petiole socket. The appressed pleural hair in *guatemalensis* is golden and much more extensive than in *opacus*. The gaster in the lectotype of *guatemalensis* is black but reddish ventrally. In the Hujintlan male the gaster is red except for the first tergite and a triangular black spot on the second tergite.

Sphex guatemalensis is similar to the Mexican color form of *S. flavovestitus* Smith but the wings are yellowish in the latter and the propodeal enclosure lacks appressed golden hair. The flagellomere and sternite characters in *guatemalensis* are identical with *opacus* and thus serve to separate males of the former from *flavovestitus* (see discussion under *opacus*).

Sphex flavovestitus Smith

Sphex flavovestita Smith, 1856. Cat. Hymen. Insect. Coll. Brit. Mus. 4 : 253. Holotype ♂, "India" (British Museum, London).

Sphex flavipes Smith, 1856. Cat. Hymen. Insect. Coll. Brit. Mus. 4 : 263. Holotype ♀, Georgia (British Museum, London). Preoccupied by *Sphex flavipes* Fabricius, 1781. New synonymy.

Sphex hirsutus Saussure, 1867. Reise Oesterreich. Fregatte Novara, Hymen. 2 : 40. Lectotype ♂, Orizaba, Mexico (Muséum d'Histoire Naturelle, Geneva), present designation. Preoccupied by *Sphex hirsutus* Scopoli, 1763. New synonymy.

Chlorion flavitarsis Fernald, 1906. Proc. U. S. Nat. Mus. 31 : 379. New name for *flavipes* Smith, 1856.

Chlorion flavitarsis saussurei Fernald, 1906. Proc. U. S. Nat. Mus. 31 : 381. New name for *hirsutus* Saussure, 1867.

Sphex flavitarsis (Fernald) of Bohart & Menke, 1963. Univ. Calif. Pub. Entomol. 30 : 121.

FERNALD (1931) erroneously stated that *flavovestita* Smith was synonymous with *opacus* Dahlbom. I have examined the types of both names and they represent two different species. *Sphex flavovestitus* is conspecific with the type of the eastern North American wasp *Sphex flavipes* Smith, currently known as *flavitarsis* (Fernald). In the United States *flavovestitus* has infumate wings with dark veins, but Mexican specimens have yellowish wings with pale veins. This latter color form was described by DE SAUSSURE under the preoccupied name *hirsutus* which FERNALD subsequently renamed *saussurei*. I have studied DE SAUSSURE's syntypes and selected a male as lectotype. The type locality for *flavovestitus*, "India", is certainly a labelling error.

Sphex ichneumoneus (Linnaeus)

Apis ichneumonea Linnaeus, 1758. Systema Natur., 10th. ed., p. 578. Lectotype ♀, Surinam (Naturhistoriska Riksmuseet, Stockholm), designated by BOHART & MENKE, 1963.

Sphex croesus Lepeletier, 1845. Hist. Natur. Insect., Hymen. 3 : 351. Holotype ♀, Amerique Septentrionale (type lost). New synonymy.

Sphex ichneumoneus ignota Strand, 1916. Archiv Naturges. [A] 81 : 99. Holotype ♀, Colombia (Deutsches Entomologisches Institut, Eberswalde). New synonymy.

I examined a female labelled "*Sphex croesus* Lep." in SPINOLA's collection which agrees with LEPELETIER's description of *croesus* except for a red petiole. This discrepancy would seem to eliminate this specimen as the type of *croesus*. In addition, red petiolate *ichneumoneus* are of South American origin and *croesus* was described from North America. In any case, the original description leaves little doubt that *croesus* is a synonym of *ichneumoneus*.

The type of *ignota* Strand is the typical South American form of *ichneumoneus*, e.g., petiole red, and terminal gastral segments black. The wings are amber and the veins are dark brown.

Sphex tinctipennis Cameron (fig. 4, 6)

Sphex tinctipennis Cameron, 1888. Biologia Centrali-Americana, Hymen. 2 : 32. Lectotype ♀, El Tumbador, Guatemala (British Museum, London), present designation.

KOHL (1890) regarded *tinctipennis* as a synonym of *S. brasilianus* Saussure, but the former has completely black legs while the latter has partially red legs. Until the type of *brasilianus* can be studied it seems best to regard *tinctipennis* as a valid species. CAMERON described *tinctipennis* from several females collected in Guatemala and Costa Rica but I could only find a Guatemalan female and have selected it as lectotype. The male of this species has not been recognized although KOHL (1895) described a red legged male which he believed to be the male of *brasilianus*. I have seen a female of *tinctipennis* from Vitoria do Mearim, Maranhao, Brazil and a male from the same locality which appears to be the other sex of this species. This male is similar to the female except that the spots and bands of appressed hair are more extensive and the erect hair is denser. Flagellomeres IV—VI bear narrow, elongate oval fossulae which occupy only the basal half of each flagellomere. The penis valve head and subgenital plate are illustrated by figures 4 and 6, respectively. Male *tinctipennis* resemble the all black color form of male *S. dorsalis* Lepeletier, but in the latter only flagellomeres V—VI have fossulae and the aedeagus is different (see figures 75, 81 in BOHART & MENKE, 1963; mislabelled as *nudus*).

I have seen female *tinctipennis* from Mexico to Brazil.

Sphex nitidiventris Spinola (fig. 1, 7)

Sphex nitidiventris Spinola, 1853. Mem. Reale Accad. Torino [2] 13 : 53. Lectotype ♀, Pará, Brazil (Università di Torino, Turin), present designation.

Sphex beata Cameron, 1888. Biologia Centrali-Americana, Hymen. 2 : 31. Lectotype ♀, Pantaleon, Guatemala (British Museum, London), present designation. New synonymy.

Sphex neotropicus Kohl, 1890. Ann. Naturhist. Hofmus. Wien 5 : 420. Syntypes ♂, ♀, Bahia, Brazil; Rio Grande do Sul, Brazil (Naturhistorisches Museum, Vienna). New synonymy.

KOHL's description of *neotropicus* compares very well with my homotype of *nitidiventris*. My studies of the type of *beatus* indicate that it is merely a Central

American bicolored form of the totally black South American *nitidiventris*. Typical *nitidiventris* is shiny black with infumate wings, black erect body hair, and the body does not have silver or golden appressed hair except occasionally on the face. Specimens from Panama to Mexico become progressively more colorful northward. In these the front and sometimes the middle femora and tibiae are red, the erect head hair is coppery or golden, and the appressed head and scutal hair is similarly colored. In Mexican examples the erect propodeal hair is pale. The penis valve head and subgenital plate are shown by figures 1 and 7, respectively.

I have selected one of Spinola's two female syntypes of *nitidiventris* as lectotype. Cameron described *beatus* from a male and female but only the female could be found.

Sphex prosper Kohl (fig. 2, 3, 5)

Sphex prosper Kohl, 1890. Ann. Naturhist. Hofmus. Wien 5 : 426. Lectotype ♂, Venezuela (Naturhistorisches Museum, Wien), present designation.

This species is known only by the male and female syntypes from Venezuela. I have selected the male as lectotype. *Sphex prosper* is entirely black and the body is covered with dense, pale, erect hair. The only appressed hair occurs on the frons and is silver. The wings are strongly infumate. The antennae in the male are not intact but one has five flagellomeres. Flagellomeres IV—V bear moderately broad fossulae which end just short of the apex of each flagellomere. The penis valve head, volsella and subgenital plate of the lectotype are shown by figures 2, 3, 5, respectively.

Sphex caliginosus Erichson

Sphex fusca Lepeletier, 1845. Hist. Natur. Insect., Hymen. 3 : 335. Lectotype ♀, "Sans Patrie" (Brazil on label) (Università di Torino, Turin), present designation. Preoccupied by *Sphex fusca* Linnaeus, 1761.

Sphex caliginosa Erichson, 1848. In Schomburgk, Reisen Britisch-Guiana Jahr. 1840—1844 3 : 589. Lectotype ♂, British Guiana (Brazil on label) (Humboldt Universität, Berlin), present designation. New synonymy.

Sphex erythroptera Cameron, 1888. Biologia Centrali-Americana, Hymen. 2 : 30. Lectotype ♂, Orizaba, Mexico (British Museum, London), present designation. New synonymy.

Two females in Spinola's collection are probably the types of *fusca* Lepeletier. However, the label beneath the specimens reads "Bresil". Lepeletier's description says "sans patrie". In spite of this discrepancy the specimens fit the original description perfectly and I have selected one female as lectotype.

Kohl (1890) and Fernald (1906) have already indicated the synonymy of *erythroptera* with *caliginosa*. Two males and four females of *caliginosa* were sent to me from Berlin that are probably the syntypes of this species. I have selected a male bearing a large green label, "*caliginosa*, N., Brasil", as lectotype. This is a J. Klug manuscript label and Erichson attributes the name *caliginosa* to Klug in the original description. No definite type locality was given by Erichson but presumably it was British Guiana. However, none of the lectoparatypes give this locality. Some have no labels but two are labelled "Cayenne" and "St. Thom." in KLUG's handwriting. Several syntypes of *erythroptera* from various localities were found in the British Museum. A male has been selected as lectotype.

Sphex latro Erichson

Sphex latro Erichson, 1848. In Schomburgk, Reisen British-Guiana Jahr. 1840—1844 3 : 588. Lectotype ♂, British Guiana (Humboldt Universität, Berlin), present designation.

Sphex clypeata Smith, 1856. Cat. Hymen. Insect. Coll. Brit. Mus. 4 : 257. Holotype ♂, Brazil (British Museum, London). New synonymy.

Sphex roratus Kohl, 1890. Ann. Naturhist. Hofmus. Wien 5 : 417. Syntypes, ♂, ♀, Bahia, Brazil; Cayenne, French Guiana (Naturhistorisches Museum, Vienna). Synonymy teste KOHL, 1895, and FERNALD, 1931.

One male and two female syntypes of *latro* exist. The male bears a label that reads "*latro* Er., Br. Guy., Schomb." (in ERICHSON's handwriting). KOHL placed another label on this specimen that says "= *roratus* Kohl". I am selecting this male as lectotype. The two females have no labels. I have studied SMITH's holotype of *clypeatus* and it is identical with *latro.*

Sphex pensylvanicus Linnaeus & Johannson

Sphex pensylvanica Linnaeus & Johannson, 1763. Centuria Insect. Rar., p. 30. Holotype ♀, Pennsylvania (British Museum, London).

Sphex pensylvanicus robustisoma Strand, 1916. Archiv Naturges. [A] 81 : 101. Holotype ♀, "Patria?" (Deutsches Entomologisches Institut, Eberswalde). New synonymy.

The type of *robustisoma* is a typical specimen of *pensylvanicus.*

Sphex fuliginosus Dahlbom

Sphex fuliginosa Dahlbom, 1843. Hymen. Europaea 1 (fasc. 1): 25. Lectotype ♀, Brazil (Humboldt Universität, Berlin), present designation.

Sphex servillei Lepeletier, 1845. Hist. Natur. Insect., Hymen. 3 : 336. Holotype ♂, Brazil (Università di Torino, Turin). New synonymy.

Sphex chichimecus Saussure, 1867. Reise Osterreich. Fregatte Novara, Hymen. 2 : 40. Lectotype ♂, Orizaba, Mexico (Muséum d'Histoire Naturelle, Geneva), present designation. New synonymy.

Sphex congener Kohl, 1890. Ann. Naturhist. Hofmus. Wien 5 : 418. Syntypes, ♀, Bahia, Brazil; Rio Grande do Sul, Brazil (Naturhistorisches Museum, Vienna). Synonymy teste KOHL, 1895.

Sphex jorgenseni Brèthes, 1913. Anal. Mus. Nac. Buenos Aires 24 : 120. Holotype ♂, Mendoza, Argentina (Museo Nacional de Ciencias Naturales, Buenos Aires). Synonymy teste WILLINK, 1951.

When DAHLBOM described *fuliginosus* he had before him specimens of two different species. One was from "Tranquebar" (India) and the other from "Brazil". It seems clear however, that DAHLBOM intended the Brazilian material to represent *fuliginosus* because in his key to species on page 436 of Hymenoptera Europaea he cited only Brazil under this name. The Tranquebar specimens, two females, are in DAHLBOM's collection in Lund, Sweden. They appear to be *Sphex* *luteipennis* Mocsary (? = *diabolicus* Smith). The Brazilian syntypic material of *fuliginosus* is in Berlin and consists of three males and one female. I have selected the female as lectotype. The only label on this specimen reads "= *Sphex congener* Kohl" (in KOHL's handwriting).

One of the syntype males bears an ERICHSON handwritten label which reads "*fuliginosa* M. Dahlb.", and a KLUG label which reads "*fuliginosa* N., Brasil". In support of not selecting this specimen as lectotype it must be pointed out that the males of *fuliginosa* have brownish wings with a very slight yellow tint. DAHLBOM, in the original description, clearly stated that the wings were yellow, a characteristic of the female. Furthermore, he did not mention the male sex.

A male in the SPINOLA Collection is labelled "*Sphex servillei* Le Pell., typus, coll. Serville, Bresil". It is synonymous with *fuliginosus.* I have seen three male syntypes of *chichimecus* from Orizaba, Mexico. They are the same as *fuliginosus* except that the erect body hair is pale. South American male *fuliginosus* have black erect hair.

Sphex fuliginosus is very similar to *pensylvanicus* and studies of the male genitalia have disclosed no apparent differences. The former occurs from southern Mexico to Argentina while the latter is known from extreme northern Mexico and over most of the United States. The only differences between the two species appears to be color. *Sphex pensylvanicus* is totally black with strongly infumate wings. Males have some appressed silver facial hair. *Sphex fuliginosus* has yellow wings in the female and lightly infumate wings in the male. Both sexes have silver faces, genae, pronotal lobes, and small silver spots on the pleura. Some males have appressed silver hair on top of the collar and in the scutal furrows. Erect body hair is black except in Mexican males.

In view of the structural similarities between *pensylvanicus* and *fuliginosus* it is tempting to consider them conspecific. However, since a large gap exists between the known ranges of the two entities, and also because of the color differences, it seems advisable at this time to recognize both as distinct species.

Sphex melanopus Dahlbom

Sphex melanopa Dahlbom, 1843. Hymen. Europaea 1 (fasc. 1): 27. Holotype ♂, Brazil (Lunds Universitets Zoologiska Institution).

Sphex ruficauda Taschenberg, 1869. Zeitsch. Ges. Naturwiss. Halle 34 : 418. Holotype ♂, "Amer. Merid." (Martin Luther Universität, Halle). Synonymy teste MENKE, 1963.

Recently I stated (MENKE, 1963) that the type of *melanopus* was in Berlin. This was based on the authority of KOHL (1895) and FERNALD (1931). However, DAHLBOM, in his original description, said that the unique type of *melanopus* was in Lund. I have recently studied the Lund specimen and it fits the current interpretation of DAHLBOM's species. *Sphex proxima* Smith was considered as synonymous with *melanopus* by FERNALD (1931) but my studies of the type indicate that it is a synonym of *S. difficilis* Spinola.

Sphex difficilis Spinola

Sphex difficilis Spinola, 1853. Mem. Reale Accad. Torino [2] 13 : 54. Holotype ♀, Pará, Brazil (Università di Torino, Turin).

Sphex proxima Smith, 1856. Cat. Hymen. Insect. Coll. Brit. Mus. 4 : 258. Holotype ♀, Brazil (British Museum, London). New synonymy.

Sphex funestus Kohl, 1890. Ann. Naturhist. Hofmus. Wien 5 : 397. Syntypes, ♀, Bahia, Brazil; Surinam; Demerara, British Guiana (Naturhistorisches Museum, Vienna). New synonymy.

I have studied the types of *difficilis* and *proxima* and they are the same as the species currently called *funestus* Kohl. *Sphex difficilis* is morphologically very similar to *S. melanopus* Dahlbom but the wings are strongly infumate and there is little or no appressed gold hair on the mesosoma in the former. In contrast, the wings of *melanopus* are clear and the mesosoma is densely covered with appressed gold hair especially on the collar, scutal furrows, propodeal enclosure, pronotal lobe and on the mesopleura behind the pronotal lobe. In view of the geographic variation in wing color and pubescence found in other Neotropical *Sphex* species it is possible that *difficilis* and *melanopus* will prove to be synonymous. The male of *difficilis* is unknown. *Sphex proxima* Smith is merely a color form of *difficilis* in which the gaster is red.

Sphex latreillei Lepeletier

Sphex latreillei Lepeletier, 1831. Guerin's Mag. Zool. 1 : 33. Holotype ♂, Chile (Museo Civico di Storia Naturale, Genoa).

Sphex thunbergi Lepeletier, 1831. Guerin's Mag. Zool. 1 : 34. Holotype ♀, Chile (type lost).

Sphex chilensis Lepeletier, 1845. Hist. Natur. Insect., Hymen. 3 : 341. Holotype ♀, Chile (type lost).

I found a male wasp in Genoa labelled: "*Sphex latreillei* L. Farg., Mag. Z., du Chili" and "coll. Guerin". It seems probable that this is the type of *latreillei.* I was unable to find specimens in Turin, Genoa, or Paris that could be positively identified as types of *chilensis* or *thunbergi.*

Isodontia (Isodontia) philadelphica Lepeletier

Sphex philadelphica Lepeletier, 1845. Hist. Natur. Insect., Hymen. 3 : 340. Holotype ♀, Pennsylvania (Università di Torino, Turin).

Sphex aztecus digueti Berland, 1926. Bull. Mus. Hist. Natur. 32 : 283. Holotype ♀, Basse-Mixtèque, Oaxaca, envir. Sylacayoapam (Muséum National d'Histoire Naturelle, Paris). New synonymy.

There is a female *Isodontia* in the SPINOLA collection that is in front of the following label: "*Sphex caerulea* Lep.?, Coll. Latr., Philadelphie". This is the specimen considered by BOHART and MENKE (1963) as the type of *philadelphica.* However, LEPELETIER stated that this type came from SERVILLE's collection so that the "*caerulea*" specimen may not be the type of *philadelphica.* Nevertheless, this specimen agrees with the original description very well. The type of *digueti* is typical *philadelphica.* The type locality of *digueti* extends the known range of *philadelphica* well into Mexico. Previously this species was known from the United States.

Isodontia (Isodontia) azteca (Saussure)

Sphex aztecus Saussure, 1867. Reise Osterreich. Fregatte Novara, Hymen. 2 : 38. Syntypes, ♂, ♀, Cordova, Mexico (Muséum d'Histoire Naturelle, Geneva).

Sphex robusta Cameron, 1889. Biologia Centrali-Americana, Hymen. 2 : 33. Lectotype ♀, N. Yucatan, Mexico (British Museum, London). New synonymy.

The specimen I have selected as lectotype for *robusta* compares very well with notes taken by R. M. BOHART on the syntypes of *azteca. Isodontia azteca* is known only from Mexico. It is similar to the North American *I. apicalis* (Smith) but the male genitalia are distinct. See figures 67 and 68 in BOHART & MENKE (1963) for genitalic differences.

Isodontia (Isodontia) costipennis (Spinola)

Sphex costipennis Spinola, 1853. Mem. Accad. Sci. Torino [2] 13 : 54. Holotype ♀, Pará, Brazil (Università di Torino, Turin).

Both VAN DER VECHT (1961) and BOHART & MENKE (1963) considered *costipennis* a synonym of *I. fuscipennis* (Fabricius). However, examination of SPINOLA's type has proven that *costipennis* is a different species. It is related to *azteca* (Saussure) but has a narrower face and more strongly converging eyes. The body is black except for reddish middle and hind femora and tibiae. The erect clypeal hair is golden but the erect mesosomal hair is white. There is some appressed silver hair on the clypeus and also a small silver spot near the hind coxa. The first pair of wings are infumate along the costal margin. The type measures 23.5 mm. in length.

Palmodes dimidiatus (De Geer)

Sphex dimidiatus De Geer, 1773. Mem. Hist. Insect. 3 : 587. Holotype ♂, Pennsylvania (Naturhistoriska Riksmuseet, Stockholm).

Sphex violaceipennis Lepeletier, 1845. Hist. Natur. Insect., Hymen. 3 : 349. Holotype ♀, Philadelphia, Pennsylvania (type lost).

I was unable to find a specimen in SPINOLA's collection that could be considered the type of *violaceipennis* Lepeletier. KOHL (1890) and FERNALD (1906) were of the opinion that LEPELETIER's species was the same as *P. abdominalis* (Cresson) (= *dimidiatus* (De Geer)) and the original description does agree very well with DE GEER's species. Since the type of *violaceipennis* is lost it seems best to follow the interpretation of KOHL and FERNALD regarding the status of this species.

Chlorion viridicoeruleum Lepeletier and Serville

Chlorion viridicoeruleum Lepeletier and Serville, 1828. Encyclopedie Methodique 10 (livr. 100): 451. Holotype ♀, Cayenne, French Guiana (Africa on label) (Università di Torino, Turin).

I examined a female in Turin which is probably the type of *viridicoeruleum.* The label behind the specimens reads: "*Chlorion viridicoeruleum* Serv., Coll. Serv., Afrique". It is the same as the species referred to under this name by MENKE & WILLINK (1964). The fact that "Afrique" is mentioned on the label suggests an error in labelling or that the specimen may not be the real type, but in any case it is probably as close to type material as will ever be found.

Chlorion hemiprasinum (Sichel)

Sphex hemiprasina Sichel, 1863. Ann. Soc. Entomol. France [4] 3 : 23. Holotype ♀, Montevideo (Muséum d'Histoire Naturelle, Paris).

I have examined the type of *hemiprasinum* and can verify that MENKE & WILLINK (1964) were correct in their interpretation of this species.

Chlorion hemipyrrhum (Sichel)

Sphex hemipyrrha Sichel, 1863. Ann. Soc. Entomol. France [4] 3 : 23. Holotype ♀, Montevideo (Muséum d'Histoire Naturelle, Paris).

SICHEL described *hemipyrrhum* as variety E of *hemiprasinum*. One female in the Paris collection bears the label "*hemiprasinum,* var. E" and must be the type of *hemipyrrhum,* although it is not labelled as such. The type agrees with the interpretation of MENKE & WILLINK (1964). The gaster is entirely red and the wings are clear. The erect body hair is black.

Ammophila (Eremnophila) binodis (Fabricius)

Sphex binodis Fabricius, 1798. Suppl. Entomol. Syst., p. 243. Holotype ♀, Cayenne, French Guiana (Bosc Collection, Muséum d'Histoire Naturelle, Paris).

The type of *binodis* agrees with my interpretation of FABRICIUS' species (MENKE, 1964). This is the same specimen referred to by FERNALD (1931). The label on the type reads: "*S. binodis* Fab., Cajenne" and is in FABRICIUS' handwriting. Another label says "Cayenne, coll. Bosc 1828".

Ammophila (Eremnophila) auromaculata Perez

Ammophila auromaculata Perez, 1891. Mem. Soc. Zool. France 4 : 499. Holotype ♀, Gran Chaco (Muséum d'Histoire Naturelle, Paris).

The type of *auromaculata* agrees with my interpretation of this species (MENKE, 1964).

Ammophila (Eremnophila) eximia Lepeletier

Ammophila eximia Lepeletier, 1845. Hist. Natur. Insect., Hymen. 3 : 373. Holotype ♂, Brazil ("Am. Sept." on label) (Università di Torino, Turin).

Ammophila eugenia Smith, 1856. Cat. Hymen. Insect. Coll. Brit. Mus. 4 : 220. Holotype ♂, "R. Grand." (University Museum, Oxford).

MENKE (1964) correctly interpreted both of these names. The specimen examined in Turin is probably the type of *eximia* although the label behind the wasp reads: "*Ammophila eximia* Kl., M. B., D. KLUG, Am. Sept." LEPELETIER gave "Bresil" as the type locality in the original description. The type is the all black form of the species and probably originated in northern South America since the mesopleural appressed hair is reduced to a small spot. The type of *eugenia* is a male of the bicolored form of *eximia.* Although SMITH described the acuminate clypeus of the male, in his description he said that it was a female.

Ammophila (Ammophila) gracilis Lepeletier

Ammophila gracilis Lepeletier, 1845. Hist. Natur. Insect., Hymen. 3 : 381. Holotype ♀, Mexico (Università di Torino, Turin).

Ammophila mutica Dahlbom, 1845. Hymen. Europaea 1 (fasc. 3): 431. Holotype, gynandromorph, Brazil (Lunds Universitets Zoologiska Institution, Lund). New synonymy.

Ammophila moneta Smith, 1856. Cat. Hymen. Insect. Coll. Brit. Mus. 4 : 219. Lectotype ♀, Brazil (British Museum, London), designated by MENKE, 1964. New synonymy.

Ammophila fragilis Smith, 1856. Cat. Hymen. Insect. Coll. Brit. Mus. 4 : 219. Lectotype ♀, Brazil (British Museum, London), designated by MENKE, 1964. New synonymy.

The types of all four names have been examined. *Ammophila gracilis* has priority over DAHLBOM's name because according to VERHOEFF (1948, p. 183) LEPELETIER's work appeared prior to the third fascicle of DAHLBOM's paper. The type locality of *gracilis* is certainly an error since the species is not known to occur outside of South America.

Podalonia violaceipennis (Lepeletier)

Ammophila violaceipennis Lepeletier, 1845. Hist. Natur. Insect., Hymen. 3 : 370. Lectotype ♀, Philadelphia, Pennsylvania (Mexico on label) (Università di Torino, Turin), present designation.

Ammophila cementaria Smith, 1856. Cat. Hymen. Insect. Coll. Brit. Mus. 4 : 223. Lectotype ♀, St. John's Bluff, E. Florida (British Museum, London), present designation.

I have examined the probable type of *violaceipennis* and can verify that MURRAY (1940) was correct in his interpretation of LEPELETIER's species. There are two different females pinned in front of the label *violaceipennis.* One is the same as *Podalonia montana* (Cameron) and is not a true type. The other fits the description of *violaceipennis* very well. To avoid confusion I have labelled the latter specimen as lectotype. Even so, there is the possibility that this specimen is not a true type because the label reads, "*Ammophila violaceipennis* Lep., G. *Psammophila* Dahlb., D. Deyrolles, Mexico". The type locality of *violaceipennis* is Philadelphia. The label may refer to the *montana* specimen which is a Mexican species. The type of *cementaria* Smith is identical with *violaceipennis.*

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